



## Owner's Manual for the P-20



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**TABLE OF CONTENTS**

TIPS FOR GETTING THE MOST FROM YOUR P20 .....	3
A NOTE ABOUT THE CTCSS or DCS CODES .....	4
CHARGING THE BATTERIES.....	5
BELT CLIP .....	5
QUICK USE INSTRUCTIONS: .....	5
RANGE OF UHF RADIOS .....	6
DISPLAY SYMBOLS.....	6
FEATURES AND LOCATION OF CONTROLS .....	7
TURNING THE RADIO ON OR OFF .....	7
LOCKING THE CONTROLS.....	7
UNLOCKING THE CONTROLS.....	7
SELECTING THE CHANNEL .....	7
PROGRAMMING THE ACTIVE CHANNEL.....	7
ADJUSTING THE VOLUME .....	8
ADJUSTING THE SQUELCH .....	8
USING THE CALL FUNCTION.....	8
USING THE MONITOR FUNCTION.....	8
TURNING ON OR OFF THE BUTTON PRESS BEEP .....	8
TURNING ON THE DISPLAY BACKLIGHT .....	8
TURNING THE ROGER BEEP ON OR OFF.....	8
ACTIVATING SCAN FUNCTIONS.....	9
DCS CODES.....	10
RESETTING THE RADIO .....	11
OPERATING THE HANDS FREE VOX (VOICE OPERATED TRANSMIT). 11	
SETTING REMOTE MONITOR MODE .....	12
SETTING MEMORY CHANNELS.....	12
ACCESSING MEMORY CHANNELS .....	12
TROUBLESHOOTING .....	13
CARE OF RECHARGEABLE NI-CAD BATTERIES .....	14
TECHNICAL SPECIFICATIONS* .....	15
LIMITED WARRANTY .....	16

**FCC Licensing Information**

This Midland model P20 radio operates on FM communication frequencies subject to the Rules and Regulations of the Federal Communications Commission. The FCC requires that all operators using Private Land Mobile frequencies obtain a radio license before operating their equipment. Application for your FCC license is made on FCC form 600 and schedules D, E, and G.

To have the forms faxed to you, call the FCC Fax-on-Demand system at 1-202-418-0177 from your Fax machine and request document 000600 for all forms and instructions.

To have this form mailed to you, call the FCC forms hotline at: 1-800-418-3676

For questions concerning license application, contact the FCC at 1-888-CALL-FCC (1-888-225-5322), or go to <http://www.fcc.gov>.

**OPTIONAL ACCESSORIES FOR YOUR RADIO**

Accessory Name	Model Number
Ni-cad Battery (single "AA" 3 required).....	18-BATT
Ni-MH Battery (single "AA" 3 required).....	18-NBAT
Standard wall Charger.....	18-396
Charger Stand for Ni-MH.....	CP20
Charger Stand for Ni-Cad.....	18-383
Dual Charger Stand for Ni-Cad .....	18-385
Lapel Microphone with Ear-bud Speaker.....	22-405
Speaker/Microphone.....	22-411
Boom Microphone Headset .....	22-540

Call 816 241 8500 ext. 200 to order accessories or go to [www.midlandradio.com](http://www.midlandradio.com).

THIS RADIO COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE CONDITION THAT THIS DEVICE DOES NOT CAUSE HARMFUL INTERFERENCE.

Your Midland model P20 UHF FM business two-way radio is designed to provide you with line-of-sight communications for a range up to 4 miles. The model P20 incorporates channels with 38 different CTCSS and 83 DCS codes to provide the best in quiet communications. Also this radio offers scan, power save, 9 memory channels and a multifunction back-lighted liquid crystal display. This unit also incorporates VOX (voice operated transmit) that allows hands free use when the radio is equipped with certain accessories.

**TIPS FOR GETTING THE MOST FROM YOUR P20**

Due to the band of operation (464/467/469 MHz) the P20 provides communications that are virtually free of atmospheric interference (skip) that is common on lower frequency bands. Along with this and an antenna system that is very efficient, communications range is surprisingly good. Many times the limit to maximum possible range is environmental factors such as blockage caused by trees, buildings, hills, or other obstructions. If you find communication is not possible, many times this can be overcome by moving only a few feet to a new location. Range is greatly reduced while operating from a metal building or from a vehicle. Battery condition also affects range. The P20 operates on rechargeable Ni-Cad batteries or alkaline batteries. While this unit has been designed with gaskets for water resistance and ruggedness it is a precision piece of electronic equipment that should not be exposed to water or handled carelessly. Normal care should result in years of trouble free operation. Do not leave batteries installed over a long period of time as leakage may occur, that can destroy the radio. If you experience problems operating the radio, turn off the radio, press and hold the "F" button and turn on the radio. This will cause the radio to return to the factory settings. **Always save your receipt, as it is required for warranty consideration.**

**WARNING**

Your wireless hand-held portable transceiver contains a low power transmitter. When the Push-to-Talk (PTT) button is pressed it sends out radio frequency (RF) signals. The device is authorized to operate at a duty factor not to exceed 50%. In August 1996, the Federal Communications Commission (FCC) adopted RF exposure guidelines with safety levels for hand-held wireless devices.

To maintain compliance with the FCC's RF exposure guidelines, this transmitter and its antenna must maintain a separation distance of least 2 inches (5 centimeters) from your face. Speak in a normal voice, with the antenna pointed up and away from the face at the required separation distance. The belt clip is for storage purposes only. DO NOT TRANSMIT WHILE USING THE BELT CLIP. To transmit, hold the device away from your body and ensure the antenna is at least 2 inches (5 centimeters) from your body when transmitting.

**A NOTE ABOUT THE CTCSS or DCS CODES**

This radio incorporates 38 CTCSS (**C**ontinuous **T**one **C**oded **S**quelch **S**ystem) codes and 83 DCS (**D**igital **C**oded **S**quelch) codes that, when activated, prevent the user from hearing other radios that do not have the same code. These codes **do not** make your conversation private. If you experience difficulties contacting or hearing other radios in your group make sure the **CTCSS** or **DCS** code is set the same on all radios. If you are using the P20 where interference from other radios or electrical devices are present, enabling the **CTCSS** or **DCS** codes will usually mute the interference. Many times interference will be noticed by the presence of loud static from the speaker.

## PREPARATION

### Batteries -

P20 radios operate with 3 AA Alkaline, Ni-Cad (nickel cadmium) or Ni-MH (nickel metal hydride) batteries (optional). Ni-Cad batteries provide about 15 hours of use. Alkaline batteries will provide about 45 hours of use and Ni-MH batteries will provide about 24 hours of use. The P20 may be supplied with Ni-Cad or Ni-MH batteries and a wall charger. Ni-Cad and Ni-MH batteries must be charged prior to use. Charge at least 10 hours with the standard charger. If you are using Ni-MH batteries charge at least 24 hours. **DO NOT attempt to charge any type of Alkaline batteries in this radio.**

### To Install Batteries:

Hold the radio face down. Press the latch so it swings away from the cover.

1. Lift the battery cover slightly. Gently slide the cover off the unit.
2. Insert 3 AA batteries observing the proper polarity.
3. Replace the battery cover over the batteries and fasten with the latch.

### Battery Indicator:


The battery Condition indicator in the display will show the amount of charge of your batteries. Replace alkaline or recharge the Ni-Cad batteries as soon as possible after the indicator shows 2 segments or less of the battery lit.

## CHARGING THE BATTERIES

The CP20 charger and Ni-MH batteries are usually supplied with the radio. This charger is designed to recharge Ni-MH batteries only. Install the batteries observing their polarity. If you are using rechargeable batteries and the Midland standard charger (model 18-396), plug the charger into a 115 volt wall socket and the charger plug into the charge jack under the cover marked **"CHG"** ( item 11 on Page 8 illustration) on the **bottom** of the radio or into the drop-in charger. Allow the batteries to charge 12 hours for Ni-Cad and 24 hours for Ni-MH prior to use. When using a drop-in charger follow the setup instructions then simply set the radio in the charger stand and observe that the LED on the charger is lit. The radio should be turned off while charging. **Never attempt to charge any type of Alkaline battery in this radio**

## BELT CLIP

The P20 comes standard with a belt clip. Attach it to the radio back by sliding the top of the clip up over the two rectangular bosses on the back of the radio until it snaps into place. To detach the belt clip, press the lever inside the top of the clip away from the radio body and slide the clip toward the bottom of the radio.

 The belt clip is intended for storage of the radio only (waiting for a call). Do not transmit the radio while attached to your belt. (see warning on page 4)

## QUICK USE INSTRUCTIONS:

Install fresh Alkaline or fully charged Ni-Cad or Ni-MH batteries.

Turn the unit on by rotating the ON/OFF Volume control clockwise.

The squelch is factory set and is not adjustable.

Make sure the radio you want to talk to does not have the CTCSS or other codes turned on.

To talk, press and hold the **"PTT"** (Push to Talk) button on the side of the radio marked "PTT".

Talk into the front of the radio about 6 inches from your mouth.

To listen release the "PTT" button.

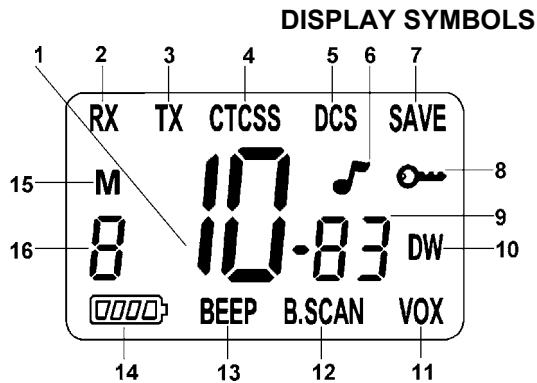
 Other functions will be described later.

## POWER SAVE CIRCUIT

This part of the operation of the radio is completely automatic and not adjustable. When the radio has not transmitted or received a signal for several seconds it will begin to cycle from a sleep mode to fully on. This occurs several times a minute. If a signal is received or you cause the radio to transmit, the radio will become fully on. This cycling from sleep to fully on increases the battery life more than 50%. An icon in the upper right of the display flashing "SAVE" will verify this.

## RANGE OF UHF RADIOS

The best range between portable UHF radios is achieved when they are operating in open terrain outside of buildings and vehicles. Anyone using a portable unit inside a vehicle will experience a significant loss of range.



### CAUTION: DON'T EXPOSE THE DISPLAY TO EXTREME HOT OR COLD TEMPERATURE

1. **Channel number:** Displays channel number 1-10.
2. **RX Symbol** Indicates busy channel.
3. **TX Symbol** Indicates unit transmitting.
4. **CTCSS Code Symbol:** Indicates "CTCSS" tone is active
5. **DCS Symbol:** Indicates that Digital Coded Squelch mode is on.
6. **Musical note** indicates **ROGER BEEP** is on.
7. **SAVE Symbol:** Flashes indicating battery save is active.
8. **Key Symbol** indicates when the keypad has been locked. Only the "PTT" and "CALL" buttons are active when this indicator is on.
9. Shows the "CTCSS" or "DCS" code you have selected. When this is on, other radios you talk to must be set to the same code.
10. **DW Symbol:** Indicates Dual Watch channel selection is active.
11. **VOX Symbol:** Indicates "VOX" is activated
12. **B.SCAN** indicates the scan mode B is in use. **SCAN** indicates the normal scan mode is in use
13. **BEEP** indicates the button press tone is active.
14. **Battery symbol** shows the battery condition. Replace or recharge the batteries when this indicator displays 2 or fewer segments of the battery.
15. **M Symbol:** Indicates a memory channel is active.
16. **Number** indicates memory channel in use.(when programmed)

## FEATURES AND LOCATION OF CONTROLS



1-VOX button    2-Up/Down Buttons    3-Monitor Button    4-Push to Talk Button  
5-Call Button    6-Accessory jacks    7-On/Off Volume Control    8-Enter Button  
9-Function Button    10-charging contacts    11-Charge Jack

THE RADIO MUST NOT BE SCANNING OR TRANSMITTING AND THE CONTROLS NOT LOCKED BEFORE THE CONTROLS WILL WORK PROPERLY.

### TURNING THE RADIO ON OR OFF

Rotate the ON/OFF Volume control (7) clockwise to turn the radio ON. An audible tone will indicate the radio is on. The display will go through a 1 second self test and go to operation mode. Rotate the ON/OFF Volume control counter clockwise to turn the radio off.

### LOCKING THE CONTROLS


Press and hold the "MON" button (3) for about 3 seconds a beep (if enabled) will be heard and the KEY icon will be displayed. The "PTT" and the "CALL" are the only buttons active. If any other buttons are pressed 3 quick beeps will be heard.

### UNLOCKING THE CONTROLS

Press and hold the "MON" button (3) for about 3 seconds a beep (if enabled) will be heard and the KEY icon will **not** be displayed.

### SELECTING THE CHANNEL


Press the "Λ" or "V" button (2) to select the desired channel.  
(ONLY IF TWO CHANNELS ARE ACTIVE)

 If only one channel is programmed and the Λ or V button is pressed 2 quick beeps will be heard.

### PROGRAMMING THE ACTIVE CHANNEL

1. With the radio turned off, press and hold the "ENTER" button and turn the radio on. Release the button after the power-up tone.
2. Press the "F" button twice or until you see "1-oN" or "1-FF" displayed.
3. To review channel programming status, press "Λ" or "V" buttons to display each channel number. The channel number followed by "oN" indicates an active channel. A channel number followed by "FF" indicates an inactive frequency.



-  You can have only two channels in the active mode at a time. If you try to activate more than two channels, the radio will beep two or three times. Check and turn off any other active channels and try again.
4. To change the status of a channel, use the  $\wedge$  or  $\vee$  buttons to select the programmed channel to be removed or added from use. Press the PTT button to change the status from "oN" to "FF". Select the new active channel with the  $\wedge$  or  $\vee$  buttons. Press the "ENTER" button to return to normal operation.

#### ADJUSTING THE VOLUME

Rotate the ON/OFF Volume control (7) clockwise to increase the volume. Rotate the ON/OFF Volume control counter clockwise to decrease the volume.

#### ADJUSTING THE SQUELCH

Squelch is preset, no adjustment is available.

#### USING THE CALL FUNCTION


Press and release the "CALL" button (5) on the side of the radio.

This will cause the radio to transmit a tone to alert the other people in your group to listen for a message.

-  Use of the call function is discouraged if using the 22-405 or the 22-540

#### USING THE MONITOR FUNCTION

1. Press and release the "MON" button (3) on the side of the radio to open the squelch.

 This allows you to over ride the squelch and the "CTCSS" or "DCS" tones. This is useful to monitor the channel before you transmit to ensure there is not someone using the channel when you have "CTCSS" or "DCS" tones programmed. This is also useful if you suspect someone in your group does not have the proper "CTCSS" or "DCS" tones programmed.
2. Press and release the "MON" button or wait 10 seconds to restore the squelch to normal.

#### TURNING ON OR OFF THE BUTTON PRESS BEEP

1. With the radio turned off, press and hold the "ENTER" button (8) and turn the radio on. The radio will display all segments available on the display and sound the power up tone. Release the "ENTER" button when the radio powers up. The display will show "FF" or "oN" depending on the previous setting, and below in smaller letters "BEEP"
2. Press and release the " $\wedge$ " or " $\vee$ " button to change the setting.
3. The setting "oN" is Beep on. The setting "FF" is Beep off.
4. Press and release the "ENTER" button to return to operating mode.


#### TURNING ON THE DISPLAY BACKLIGHT


Press and release the "ENTER" button (8). A beep will be heard (if enabled). The backlight will stay on for about 5 seconds then turn off.


#### TURNING THE ROGER BEEP ON OR OFF

Roger beep is a sound the radio transmits when you release the "PTT" button (4).

1. With the radio turned off, press and hold the "ENTER" button and turn the radio on. The radio will display all segments available on the display and sound the power up tone. Release the "ENTER" button when the radio powers up. The display will show "FF" or "oN" depending on the previous setting, and below in smaller letters "BEEP"
2. Press and release repeatedly the "F" button (usually once). An icon of a musical note will be displayed above "oN" or "FF" on the display.
3. Press and release the " $\wedge$ " or " $\vee$ " button to change the setting.

 The setting "oN" is Roger beep on. The setting "FF" is Roger beep off.

 The Roger beep is the same sound as the Power Up tone
4. Press and release the "ENTER" button to return to operating mode.

 Use of roger beep is discouraged when earphones or headsets are in use.



### ACTIVATING SCAN FUNCTIONS

The P20 has three scan modes. The most popular and most used is the “**BUSY**” channel scan. This allows the radio to stop on a channel that someone is talking on.

When the radio stops on a “Busy” channel, the scan will stop and resume after about 5 seconds. The second is the “**OPEN**” channel scan. This allows the radio to stop on the channel NOT used. The third is “**DUAL WATCH**”. This allows you to monitor the active channel and one of the ten available channels.

#### Busy Channel Scan:

1. Press and release the “**F**” button (9), the “SCAN” icon will begin flashing in the lower center of the display.
2. Press and release the “**^**” or “**V**” button to activate scan. The unit will now begin scanning the active channels.
  - ☰ Pressing the “**PTT**” (push to talk) button will cause the radio to stop scanning and return to normal operate mode.
  - ☰ When you enter the “program mode” with the “**F**” button the radio will go back to operate mode after about 8 seconds if no buttons are pressed.

#### Open Channel Scan:

1. Press and release the “**F**” button repeatedly (usually twice) until the “**B.SCAN**” icon flashes in the lower center of the display.
2. Press and release the “**^**” or “**V**” button to activate scan. The radio will begin to scan for the **OPEN** channel.
  - ☰ Scanning will stop on the open channel for about 5 seconds then move to the other channel.
3. Press the “**PTT**” button to stop scanning and talk on that channel.
4. To reactivate scan repeat steps above.
  - ☰ When you enter the “program mode” with the “**F**” button the radio will go back to operate mode after about 8 seconds if no buttons are pressed.

#### Dual Watch

Dual watch is a function that allows you to scan the current active channel and one other channel.

1. Select the active channel.
2. Press the “**F**” button repeatedly (usually 5 times) until “**DW**” is flashing in the top of the display.
3. Select the second channel to be scanned.
  - ☰ About 3 seconds after your selection of the second channel is complete the radio will begin switching between the two channels.
  - ☰ When the radio hears activity on either channel, scanning will stop on that channel for about 5 seconds and then resume scanning.
  - ☰ If communication is desired on the channel scanning stopped on, press the “**PTT**” button. This will deactivate Dual Watch and allow you to communicate normally.
4. To reactivate Dual Watch repeat steps above.

## ACTIVATING "PRIVACY CODES"

### To activate "CTCSS" codes

1. Press the "F" button repeatedly (usually 3 times) to cause the icon "CTCSS" to be displayed in the upper left of the display to flash.
2. Press and release the "Λ" or "V" buttons to select the "CTCSS" code you desire.
  - ☐ A code of "00" means no code is programmed.
  - ☐ You must do this for each of the channels you want **CTCSS** codes on.
  - ☐ Activating the "CTCSS" code will prevent you from hearing any conversation that is not using the same "CTCSS" code. This does not make your conversation private.

The following is a list of frequencies of the CTCSS codes. Different brands of radios may use a different number code for the frequencies. For operation with other brands of radios the selected CTCSS frequency must match.

01=67.0 Hz	11=97.4 Hz	21=136.5 Hz	31=192.8 Hz
02=71.9 Hz	12=100.0 Hz	22=141.3 Hz	32=203.5 Hz
03=74.4 Hz	13=103.5 Hz	23=146.2 Hz	33=210.7 Hz
04=77.0 Hz	14=107.2 Hz	24=151.4 Hz	34=218.1 Hz
05=79.7 Hz	15=110.9 Hz	25=156.7 Hz	35=225.7 Hz
06=82.5 Hz	16=114.8 Hz	26=162.2 Hz	36=233.6 Hz
07=85.4 Hz	17=118.8 Hz	27=167.9 Hz	37=241.8 Hz
08=88.5 Hz	18=123.0 Hz	28=173.8 Hz	38=250.3 Hz
09=91.5 Hz	19=127.3 Hz	29=179.9 Hz	00=OFF
10=94.8 Hz	20=131.8 Hz	30=186.2 Hz	

## DCS CODES

There are 83 "DCS" codes. These are used in the same manor as the "CTCSS" codes.

### To activate the DCS Codes

1. Press the "F" button repeatedly until the "DCS" icon flashes (usually 4 times).
2. Press the "Λ" or "V" button to select the "DCS" code you desire.
3. Press the "ENTER" button when you have made your selection.
  - ☐ When you enter the program mode with the "F" button, the radio will go back to operate mode after about 8 seconds if no buttons are pressed.
  - ☐ A code of "00" means no code is programmed.
  - ☐ You must do this for all the channels you want "DCS" codes on.
  - ☐ Turning on the "DCS" code will prevent you from hearing any conversation that is not using the same "DCS" code. This does not make your conversation private.

The following list contains the values of the "DCS" codes. Different brands of radios may use different codes. For operation with other brands of radios the selected "DCS" value must be the same.

01=023	11=071	21=134	31=223	41=306	51=411	61=503	71=631	81=734
02=025	12=072	22=143	32=226	42=331	52=412	62=506	72=632	82=743
03=026	13=073	23=152	33=243	43=315	53=413	63=516	73=654	83=754
04=031	14=074	24=155	34=244	44=331	54=423	64=532	74=662	
05=032	15=114	25=156	35=245	45=343	55=431	65=546	75=664	
06=043	16=115	26=162	36=251	46=346	56=432	66=565	76=703	
07=047	17=116	27=165	37=261	47=351	57=445	67=606	77=712	
08=051	18=125	28=172	38=263	48=364	58=464	68=612	78=723	
09=054	19=131	29=174	39=265	49=365	59=465	69=624	79=731	
10=065	20=132	30=205	40=272	50=371	60=466	70=627	80=732	

## RESETTING THE RADIO

If the radio stops responding to button presses or otherwise does not function properly in some cases the radio can be reset to restore normal operation.

To reset the radio: With the radio off, press and hold the “F” button and turn the radio on. Release the “F” button when the radio powers up. (see turning the radio on)

- ☰ This operation will reset the radio to factory settings and will erase all memory channels that have been programmed.

## OPERATING THE HANDS FREE VOX (VOICE OPERATED TRANSMIT)

To get the most use from the “VOX” feature you must first determine what sensitivity level is needed to activate the “VOX” control. Sensitivity is how loud you have to talk to activate the “VOX” circuit. The “VOX” has 6 levels of sensitivity that can be adjusted. The 1 option you can talk in a normal voice with no background noise to activate the “VOX” circuit. The higher level numbers will require increasing voice level to activate the “VOX” circuit. This is useful in noisier areas that might activate the “VOX” without talking. The next adjustment is the *delay*. This is a function of the “VOX” that keeps the radio in transmit mode after you stop talking. A delay that is set to short will cause the “VOX” circuit to stop between some words. The delay is adjustable to 6 levels. Level 1, the shortest will give about one half second of delay. Increasing the delay value extends the transmitter time to two seconds or more. By activating the “VOX” you only have to talk into the front of the radio or use a headset to make the radio transmit. The PTT (push to talk) button is not functional in “VOX” mode. It is recommended to use a headset when using the “VOX” feature.

### Choosing VOX operation

Press and hold the **VOX** button of the radio for one second so “**VOX**” icon appears on the display.

### Setting “VOX” Sensitivity Level:

- ☰ The sensitivity is adjustable by 6 levels. Level 1 is the most sensitive.

#### To set the sensitivity level

1. With the radio turned off, press and hold the “**ENTER**” button and turn the radio on. The radio will display all segments available on the display and sound the power up tone. Release the “**ENTER**” button after the radio powers up. The display will show “**FF**” or “**on**” depending on the previous setting, and below in smaller letters “**BEEP**”
2. Press the “**F**” button repeatedly (usually three times) until you see “**LE**” on the display.
  - ☰ The number next to “**LE**” is the sensitivity level setting.
3. Press the “**Λ**” or “**V**” button repeatedly to change the “**VOX**” sensitivity.
4. Proceed to step 2 below if setting the delay is desired.
5. Press and release the “**ENTER**” button to return to the operation mode or press the “**F**” button to continue settings.

### Setting “VOX” Delay.

The Delay is adjustable by 6 levels. Level 1 is the least amount of delay.


1. Refer to step one above.
2. Press and release the “**F**” button until “**dL**” is on the display.
  - ☰ The numbers next to the “**dL**” is the delay setting.
3. Press the “**Λ**” or “**V**” button to change the **DELAY** setting.
4. Press and release the “**ENTER**” button to return to operation mode.

### Using accessories while in “VOX” mode.

Accessories for private listening are available. Those with a “VOX/PTT” switch built in can be used with the P20 in “VOX” mode. Turn on the radio. Set the radio to “VOX”. Set the accessory VOX/PTT switch to “VOX”.

- ☞ Key beep tones may sound very loud when using a headset or earpiece. We advise turning off tones and avoid using the call feature when using accessories.

### SETTING REMOTE MONITOR MODE

1. Choose a channel to be used, set **BOTH** radios to that channel.
  2. With the radio to be used for the monitor off, press and hold the "**ENTER**" button and turn the radio on.
  3. Release the "**ENTER**" button when the radio powers up.
  4. Press and release the "**F**" button repeatedly until "**bb**" (usually 5 times) is on the display.
  5. Press and release the "**Λ**" or "**V**" button repeatedly to select the sensitivity level.
    - ☰ The two numbers to the right of the "**bb**" is the sensitivity. This can be set from 01 to 06. A sensitivity level of 01 is the most sensitive.
  6. Adjust the volume as desired.
  7. Press and release the "**ENTER**" button to activate remote monitor mode.
    - ☰ The radio will enter monitor mode after 1 minute. If the remote radio hears a sound, the radio will send the call signal. After the call is complete the remote radio will transmit for 10 seconds. This allows you to hear the sound. After the 10 seconds of transmit is complete, the remote radio will go to receive for 10 seconds allowing you to transmit to the remote radio. This cycle continues 3 times then the remote radio goes back to monitor mode.
    - ☰ To ensure reliable communications, be certain fresh batteries are used.
-  **WARNING** This monitoring is NOT intended in any way as a life saving device.

### To exit the remote monitor mode

Switch the radio off then on.

### SETTING MEMORY CHANNELS

- ☰ There are 9 memory channels available.

#### To set Memory Channels

1. Press the "**F**" button repeatedly until the "**M**" is displayed above the flashing memory channel number in the lower left of the display.
2. Select a memory channel by pressing and releasing the "**Λ**" or "**V**" buttons.
  - ☰ If the channel you want to program is the displayed channel when you access the memory program mode, you must change the channel and return to that channel before programming is allowed.
3. Press and release the "**F**" button. The first number (usually will be 0) will flash. Choose a channel by pressing and releasing the "**Λ**" or "**V**" button.
  - ☰ The next step has three options. **1.** Choosing a "**CTCSS**" tone. **2.** Choosing a "**DCS**" tone. **3.** Choosing no tone at all.
4. Press and release the "**F**" button. The next two numbers (usually will be 00) will flash as well as the "**CTCSS**" in the upper left of the display. If no tone is desired go to step 5. Select a "**CTCSS**" tone desired or press and release the "**F**" button again. The "**DCS**" will begin to flash, select a "**DCS**" tone desired.
5. Press and release the "**ENTER**" button to complete the programming.
  - ☰ The "**CTCSS**" or "**DCS**" must be flashing when you press the "**ENTER**" button to complete the programming.
  - ☰ After pressing the "**ENTER**" button, the radio will go back to normal operating mode.

### ACCESSING MEMORY CHANNELS

1. Press and release the "**F**" button repeatedly (usually 6 times) until the display shows a number in the lower right of the display.
  - ☰ This will be the location without the "**M**" above the number.
  - ☰ If the number is flashing this indicates the memory channel has not been programmed.
2. Press and release the "**Λ**" or "**V**" button to select a "**Memory Channel**" previously programmed.
  - ☰ To exit the "**Memory Channel**" mode, press and release the "**ENTER**" button or press the "**F**" button twice.

**TROUBLESHOOTING**

**PROBLEM SOLUTION**

No Power	1. Check battery installation and/or replace batteries
Cannot Receive Messages	<ol style="list-style-type: none"> <li>1. Make sure the volume is set high enough.</li> <li>2. Confirm the radios have the same channel and or CTCSS/DCS code settings.</li> <li>3. Change your location, you may be out of range.</li> <li>4. Install batteries properly or replace.</li> <li>5. Buildings, obstructions, operating indoors or in vehicles may interfere with communication. Change your location.</li> <li>6. Make sure the radio is not transmitting. This could be due to the radio being switched to VOX operation or accessories not set properly.</li> </ol>
Range is Short	<ol style="list-style-type: none"> <li>1. Operating the radio from a vehicle or from a metal building will decrease the range. If possible operate outside of vehicles or buildings.</li> <li>2. Carrying the radio so that the antenna is very near the body will decrease the range. Hold the radio in the open for the best range.</li> <li>3. Battery condition can affect range. Replace or recharge batteries.</li> </ol>
Interference/Static	<ol style="list-style-type: none"> <li>1. Using the CTCSS should stop you from hearing interference from other users and computers.</li> <li>2. Radios too close. Radios must be at least 5 feet apart.</li> <li>3. Radios too far apart. Obstacles interfere with transmissions. Talk range is up to 4 miles in unobstructed, clear areas.</li> </ol>
Radio is not responding to button presses	<ol style="list-style-type: none"> <li>1. Make sure radio is not in "VOX" mode.</li> <li>2. Make sure key lock is not on. See To lock the controls</li> <li>3. Make sure radio is not transmitting.</li> <li>4. Radio might need to be reset, See Resetting Radio.</li> <li>5. Ensure accessory microphone is set properly (see Page 13).</li> </ol>
Display is dim	1. Reposition or replace batteries.
Charger not functioning	<ol style="list-style-type: none"> <li>1. Charger pin is not properly in place. Check that charger is fully inserted into the jack on the bottom of the radio. If using the drop-in charger, check the contacts on the bottom of the radio they may require cleaning. If all is correct allow the batteries to charge for the specified time.</li> <li>2. Ensure the outlet the charger is plugged into is functioning properly.</li> <li>3. Check that the batteries are installed in the radio properly.</li> <li>4. Remove batteries from the radio and try to charge separately.</li> </ol>

## **CARE OF RECHARGEABLE NI-CAD BATTERIES**

### **ALWAYS DISPOSE OF BATTERIES PROPERLY**

Always follow the battery manufactures recommendations for Charging and disposing of Ni-cad batteries.

The following is meant as general information regarding Ni-cad batteries.

1. Occasionally allow the batteries to fully discharge before recharging. The battery indicator showing less than two segments will indicate full discharge.
2. Always allow the battery to fully charge before using. This requires 10 hours with the approved charger. (Ni-MH batteries require 16 hours for full charge.)
3. The above will prevent the batteries from developing "memory" which effectively reduces their capacity.
4. It is better to store Ni-cad batteries that are discharged rather than charged.

**Note: Do not charge any type of alkaline batteries in this unit.**

**TECHNICAL SPECIFICATIONS\***

**GENERAL**

Frequency range.....**464/467/469 MHz**  
Channels.....**10**  
Modulation type..... **FM**  
Antenna impedance .....**50 Ohm**  
Loud-speaker..... **8 Ohm 0.5W**  
Microphone.....**electronic type**  
Power supply.....**3 AA Ni-cads or Alkaline(3.6/4.5VDC)**

**RECEIVER**

Sensitivity at 12dB Sinad.....**0.35µV**  
Selectivity.....**50 dB**  
Squelch range.....**Automatic**  
Audio output power.....**0.25W @ 8 Ohm (10% distortion)**  
Distortion at 500 mV.....**7%**  
Audio frequency response.....**400-2400 Hz**

**TRANSMITTER**

RF Output Power.....**nominal 1000 mW @ 4.5VDC**  
Frequency Tolerance.....**0.00025%**  
Harmonic Suppression.....**more than 50 dB**  
Modulation.....**FM +/- 2.5 kHz**

**\*Specifications are nominal and subject to change**

**CHANNEL FREQUENCIES**

01=464.500	05=467.850	09=469.500 /
02=464.550	06=467.875	464.500
03=467.7625	07=467.900	10=469.550 /
04=467.8125	08=467.925	464.550



## Owner's Manual for the P-20 (Itinerant Radio)

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### SERVICE:

If you have a problem, which you believe requires service, please call first and speak with a service technician. Many problems can be remedied over the phone without returning the unit for service.

#### If it ever becomes necessary to return your unit for service:

1. Pack the unit in its original box and packing.
2. Pack the original box in a suitable shipping carton. Improper packing will result in damage during shipment.
3. Include a photocopy of the bill of sale showing the date of purchase.
4. Include a brief description of the problem you are having.
5. Include a DAYTIME telephone number.
6. Include a money order or Visa or Master Card credit card number for \$7.50 to cover shipping and handling. No personal checks please.
7. You do not need to return accessory unless they maybe directly related to the problem.
8. This information must be included before Warranty Service can be considered. Failure to include these items will delay the repair of the radio until these items are received.

### LIMITED WARRANTY

Midland Consumer Radio Inc. will repair or replace, at its option without charge, any Midland GMRS transceiver, which fails due to a defect in material or workmanship within ONE YEAR following the initial consumer purchase. This warranty does not include any carrying cases, earphones, or antennas, which may be a part of or included with the warranted product. Performance of any obligation under this warranty may be obtained by returning the warranted product, freight prepaid, along with proof of purchase date, to Midland Consumer Radio Inc., Warranty Service Department, 1120 Clay Street North Kansas City, MO 64116. Warranty information may be obtained by writing Midland Consumer Radio, Warranty Service Department at the above address.

This warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state.

**Note:** The above warranty applies only to merchandise purchased in the United States of America or any of the territories or possessions thereof, or from a U.S. Military exchange.

## MIDLAND RADIO CORPORATION

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